



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,700	06/27/2003	Michael David Mundt	S01.12-0979/STL 11229.00	9643
27365	7590	05/25/2006	EXAMINER	
SEAGATE TECHNOLOGY LLC C/O WESTMAN CHAMPLIN & KELLY, P.A. SUITE 1400 900 SECOND AVENUE SOUTH MINNEAPOLIS, MN 55402-3319			CHEN, TIANJIE	
			ART UNIT	PAPER NUMBER
			2627	

DATE MAILED: 05/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,700

Applicant(s)

MUNDT ET AL.

Examiner

Tianjie Chen

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-10,12,15,16,20-25,28 and 30 is/are pending in the application.
- 4a) Of the above claim(s) 4-6,9 and 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,7,8,12,15,16,20-25,28 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Non-Final-Rejection (RCE)

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/09/2006 has been entered. Claims 1, 3-10, 12, 15, 16, 20-25, 28, and 30 are pending; whereon claims 4-6, 9, and 10 are withdrawn from consideration and claims 1, 3, 7, 8, 12, 15, 16, 20-25, 28, and 30 are under examination.

Specification

2. The disclosure is objected to because of the following informalities:

Applicant discusses pressure distribution in "off-nodal" region and the means for limiting "off-nodal" pressurization. However, in many places, "off-nodal" has been erroneously written as "off nodal" and "limiting off-nodal pressurization" has been erroneously written as "limiting off nodal pressurization."

Appropriate correction is required.

Claim Objections

3. Claim 20 is objected to because of the following informalities:

In claim 20, line 5; "off nodal" should be changed to --off-nodal--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 30, 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Rao (US 6,999,282).

Claim 1, Rao shows an air bearing slider in Fig. 12 including: a slider body including a leading edge (left side), a trailing edge (right side) and opposed sides (top and bottom), and including an elongate length between the leading and trailing edges forming a leading edge portion, a trailing edge portion, and an intermediate portion proximate to a center axis of the slider body; and a cross width between the opposed sides; and the slider body including a center portion and opposed side portion, a raised bearing surface along the leading edge portion of the slider body having a narrow cross width within the center portion of the slider body, and the raised bearing surface along the intermediate portion having an expanded cross width relative to the cross width of the raised bearing surface or surfaces along the leading edge portion of the slider body; a stepped portion 1116 (Figs. 11 and 12) having a cross width profile that includes a narrowing cross width dimension that narrows in a direction towards the trailing edge of the slider body.

Claim 30, Rao shows that each of the raised bearing surfaces (including 1110, 1112 and the central main bearing surface) on the leading edge portion of the slider body collectively form a narrow cross width profile (at the leftmost tip of the main bearing surface) within the center portion of the slider body.

Claim 12, as described above, Rao shows an air bearing slider including: a slider body having a leading edge, a trailing edge, opposed sides and a cross width between the opposed sides and a raised bearing surface or surfaces elevated above a recessed surface or surfaces and the raised bearing surface or surfaces having a narrow cross width along a leading edge portion of the slider body and a raised center portion spaced from opposed sides proximate to the trailing edge of the slider body.

5. Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Cha et al (US 6,943,989).

Claim 21, Cha et al shows an air bearing slider in Fig. 3, including: a slider body having a leading edge, a trailing edge and opposed sides; and raised bearing surfaces 12 and 14 having a perimeter surface profile including a narrow leading edge cross width, an expanded intermediate cross width and a trailing edge profile having a narrow cross width relative to the expanded intermediate cross width and a raised center pad 21a proximate to the trailing edge spaced from opposed sides of the slider body.

6. Claims 12, 15, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Park et al (US 6,411,468).

Art Unit: 2627

Claim 12, Park shows an air bearing slider in Fig.6 including: a slider body having a leading edge, a trailing edge, opposed sides and a cross width between the opposed sides and a raised bearing surface or surfaces elevated above a recessed surface or surfaces and the raised bearing surface or surfaces having a narrow cross width along a leading edge portion of the slider body and a raised center portion spaced from opposed sides proximate to the trailing edge of the slider body.

Claim 15, as described above, Park et al shows that the raised bearing surface or surfaces include divergent bearing rails or surfaces which extend outwardly from a raised center portion along the leading edge portion of the slider body.

Claim 16, Park et al shows in Fig. 6 a stepped bearing surface 142 recessed from the raised bearing surfaces 150 and 151 and elevated above a cavity surface and the divergent bearing rails 150 and 151 are formed on the stepped bearing surface.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 21, 28, 3, 24, 7, 8, 22, 23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al in view of Cha et al.

Claim 21, Park et al shows an air bearing slider in Fig. 6, including: a slider body having a leading edge, a trailing edge and opposed sides; and raised bearing surfaces 142+150+151 having a perimeter surface profile including a narrow leading

Art Unit: 2627

edge cross width, an expanded intermediate cross width and a trailing edge profile having a narrow cross width relative to the expanded intermediate cross width and a raised center pad 21a proximate to the trailing edge spaced from opposed sides of the slider body.

Park fails to show a stepped bearing surface proximate to the raised center pad and recessed from the raised center pad and elevated from a cavity surface.

Cha shows a stepped bearing surface 22a proximate to the raised center pad 21a and recessed from the raised center pad and elevated from a cavity surface (Column 5, line 53 to column 6, line 13) and teaches that the stepped pad would provide improved lift-off for the slider and prevent damage to the rails (Column 6, lines 17-19). One of ordinary skill in the art would have been motivated to add the stepped pad taught by Cha onto park et al's slider for providing improved lift-off and preventing damage.

Claim 28, Park et al further shows that the raised bearing surfaces include divergent bearing surfaces 150 and 151 extending along an intermediate portion of the slider body.

Claim 3, Park et al further show that divergent bearing surfaces include opposed side rails 150 and 151 angled outwardly in a direction of the trailing edge.

Claim 22, Park et al further shows that the angled side rails extend from a raised center portion 141 having a narrow width dimension to provide the narrow cross width for the raised bearing surface or surfaces proximate to the leading edge of the slider body.

Claim 23, Park et al also shows a leading edge stepped surface 142 elevated from the cavity surface and recessed from the raised bearing surfaces 150 and 151 of the angled side rail.

Claim 24, Park et al shows in Fig. 6 that the slider body includes a stepped bearing surface 150+151 having a tapered outer profile elevated from a cavity surface and the angled side rails are formed on the tapered stepped bearing surface.

Claim 7; Park et al shows that the divergent bearing surfaces 150+151 include raised bearing rails on opposed sides of a cross axis of the slider body along the intermediate portion of the slider body and the raised bearing rails angled outwardly in a direction toward the trailing edge of the slider body to form the narrow leading edge cross width along a leading edge portion and the expanded intermediate cross width along the intermediate portion of the slider body.

Claim 8, Park et al further shows the raised bearing rails 150 and 151 extend from a raised center portion 142 and the slider includes a stepped bearing surface 142 elevated from the cavity surface having a narrow cross width along the leading edge portion and an expanded cross width along the intermediate portion of the slider body, wherein the raised bearing rails and the raised center portion are formed on the stepped bearing surface.

Claim 22, Park et al further shows in fig. 6 that the angled side rails 150 and 151 extend from a raised center portion 142 having a narrow width dimension to provide the narrow cross width for the raised bearing surfaces proximate to the leading edge of the slider body.

Claim 25, Park et al further shows in Fig. 6 that a stepped bearing surface 142 recessed from the raised surfaces 150 and 151 proximate to the divergent bearing

Art Unit: 2627

surface or surfaces 150 and 151 and inherently pressurizes the divergent bearing surface or surfaces.

8. Claim 20 is rejected under 35 U.S.C. 102(b) as being anticipated by Wang et al (US 6,275,467).

Claim 20, Wang et al shows an air bearing slider in Fig. 2 including: a slider body including a leading edge, a trailing edge and opposed sides; and bearing surface means on the slider body for providing a nodal bearing pressure profile (Fig. 3), which would limit pressurization in both nodal region and off-nodal region.

Response to Arguments


9. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tianjie Chen whose telephone number is 571-272-7570. The examiner can normally be reached on 8:00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2627

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


TIANJIE CHEN
PRIMARY EXAMINER